

3D IMAGING OF ELECTRICAL ACTIVITY IN MYOCARDIAL TISSUE

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OBJECTIVES:

diffusive optical tomography
and voltage-sensitive dyes

sources of arrhythmia hidden
inside the myocardial wall
5-10 mm

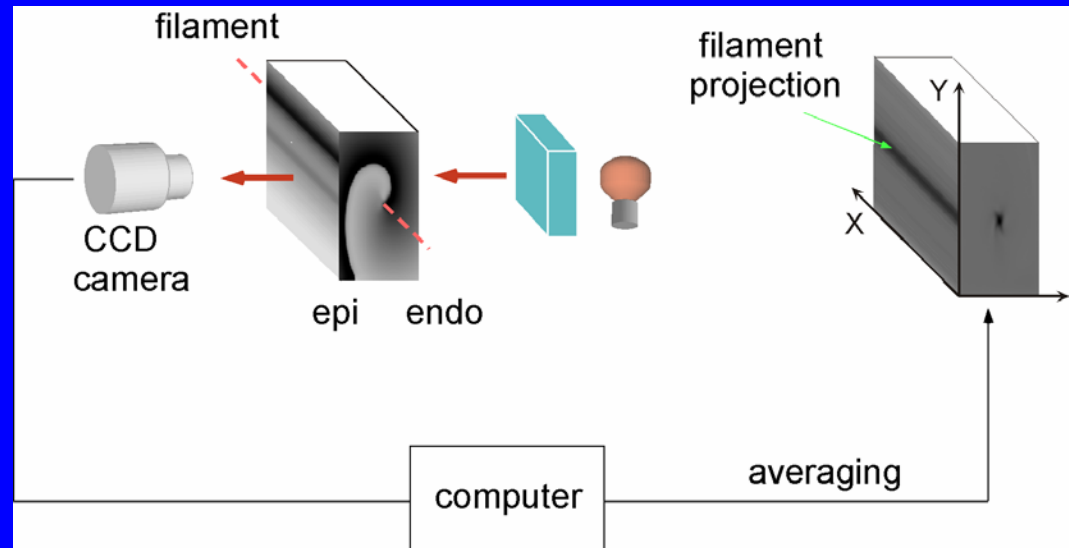
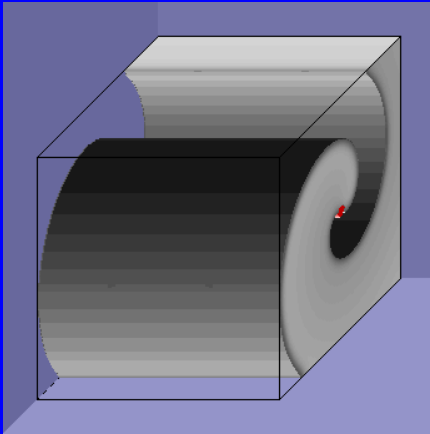
two-photon fluorescence (2PF) and
second harmonic generation (SHG)

cardiac myocytes, embrionic hearts
and tissues at sub-millimeter scales,
5 μm – 500 μm

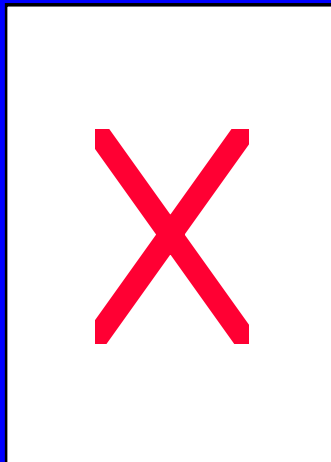
New NIR voltage-sensitive probes

Imaging of intramural scrolls

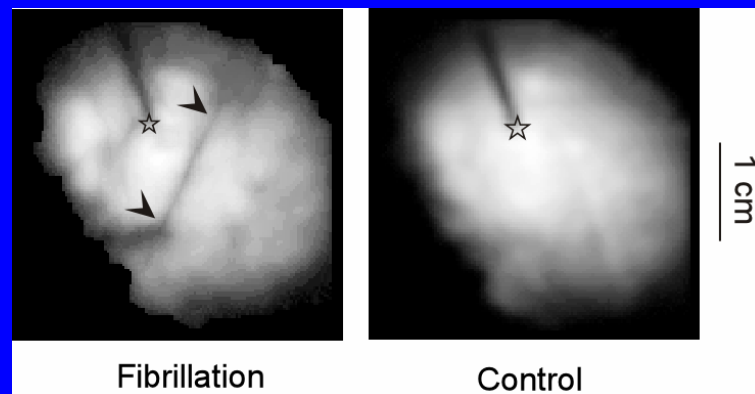
Intramural scroll wave



Simulation, forward problem
(filament depth 2.2 mm)



Sheep, right ventricular wall



Analysis of field induced tissue polarization

